

Code No: 07A42301

**R07****Set No. 2**

**II B.Tech II Semester Examinations, APRIL 2011**  
**MASS TRANSFER AND SEPARATION**  
**Bio-Technology**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
 All Questions carry equal marks

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1. What are the three basic mechanisms of mass transfer? When separating chemicals in commercial equipment, which mechanism is preferred? Why? [16]
2. Write short notes on (with neat diagrams)
  - (a) Adsorption of vapors at low pressures in fixed bed adsorption
  - (b) fixed bed adsorption of vapors at high pressures. [8+8]
3. By what mechanisms does diffusion occur in porous solids? Why is diffusion in crystalline solids much slower than in amorphous solids? [16]
4. Write short notes on:
  - (a) Absorption
  - (b) Stripping
  - (c) Effect of temperature on absorption. [5+5+6]
5. Write short note on :
  - (a) fixed bed leaching
  - (b) Moving bed leaching with neat diagrams. [16]
6. Explain in detail the procedure to find the number of trays in a distillation column by using McCabe Thiele method? [16]
7. Write short notes on the following:
  - (a) Various definitions of mass transfer coefficients.
  - (b) Overall Mass Transfer Coefficients. [8+8]
8. The hollow fiber separator with selectivity has  $300 \times 600 \mu\text{m}$  fibers 1m long and an external area of  $5.2\text{m}^2$ 
  - (a) with a permeate flow of 3.1L/min, what are the exit velocity and pressure drop in the fiber lumen.
  - (b) If a separator were made with the same membrane in the form of  $150 \times 300 \mu\text{m}$  fibers what would be the pressure drop [8+8]

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**R07****Set No. 4**

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**MASS TRANSFER AND SEPARATION**  
**Bio-Technology**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
 All Questions carry equal marks

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2. The hollow fiber separator with selectivity has  $300 \times 600 \mu\text{m}$  fibers 1m long and an external area of  $5.2\text{m}^2$ 
  - (a) with a permeate flow of 3.1L/min, what are the exit velocity and pressure drop in the fiber lumen.
  - (b) If a separator were made with the same membrane in the form of  $150 \times 300 \mu\text{m}$  fibers what would be the pressure drop [8+8]
3. Explain in detail the procedure to find the number of trays in a distillation column by using McCabe Thiele method? [16]
4. Write short notes on (with neat diagrams)
  - (a) Adsorption of vapors at low pressures in fixed bed adsorption
  - (b) fixed bed adsorption of vapors at high pressures. [8+8]
5. Write short notes on the following:
  - (a) Various definitions of mass transfer coefficients.
  - (b) Overall Mass Transfer Coefficients. [8+8]
6. By what mechanisms does diffusion occur in porous solids? Why is diffusion in crystalline solids much slower than in amorphous solids? [16]
7. Write short notes on:
  - (a) Absorption
  - (b) Stripping
  - (c) Effect of temperature on absorption. [5+5+6]
8. Write short note on :
  - (a) fixed bed leaching
  - (b) Moving bed leaching with neat diagrams. [16]

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**R07****Set No. 1**

**II B.Tech II Semester Examinations, APRIL 2011**  
**MASS TRANSFER AND SEPARATION**  
**Bio-Technology**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
 All Questions carry equal marks

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1. The hollow fiber separator with selectivity has  $300 \times 600 \mu\text{m}$  fibers 1m long and an external area of  $5.2\text{m}^2$ 
  - (a) with a permeate flow of 3.1L/min, what are the exit velocity and pressure drop in the fiber lumen.
  - (b) If a separator were made with the same membrane in the form of  $150 \times 300 \mu\text{m}$  fibers what would be the pressure drop [8+8]
2. Write short notes on:
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  - (a) Various definitions of mass transfer coefficients.
  - (b) Overall Mass Transfer Coefficients. [8+8]
7. Write short note on :
  - (a) fixed bed leaching
  - (b) Moving bed leaching with neat diagrams. [16]
8. Write short notes on (with neat diagrams)
  - (a) Adsorption of vapors at low pressures in fixed bed adsorption
  - (b) fixed bed adsorption of vapors at high pressures. [8+8]

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**R07****Set No. 3**

**II B.Tech II Semester Examinations, APRIL 2011**  
**MASS TRANSFER AND SEPARATION**  
**Bio-Technology**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
 All Questions carry equal marks

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1. Write short note on :
  - (a) fixed bed leaching
  - (b) Moving bed leaching with neat diagrams. [16]
2. Write short notes on (with neat diagrams)
  - (a) Adsorption of vapors at low pressures in fixed bed adsorption
  - (b) fixed bed adsorption of vapors at high pressures. [8+8]
3. Explain in detail the procedure to find the number of trays in a distillation column by using McCabe Thiele method? [16]
4. What are the three basic mechanisms of mass transfer? When separating chemicals in commercial equipment, which mechanism is preferred? Why? [16]
5. Write short notes on the following:
  - (a) Various definitions of mass transfer coefficients.
  - (b) Overall Mass Transfer Coefficients. [8+8]
6. The hollow fiber separator with selectivity has  $300 \times 600 \mu\text{m}$  fibers 1m long and an external area of  $5.2\text{m}^2$ 
  - (a) with a permeate flow of 3.1L/min, what are the exit velocity and pressure drop in the fiber lumen.
  - (b) If a separator were made with the same membrane in the form of  $150 \times 300 \mu\text{m}$  fibers what would be the pressure drop [8+8]
7. Write short notes on:
  - (a) Absorption
  - (b) Stripping
  - (c) Effect of temperature on absorption. [5+5+6]
8. By what mechanisms does diffusion occur in porous solids? Why is diffusion in crystalline solids much slower than in amorphous solids? [16]

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